

Appl. No. 10/770,258
Examiner: CHEN, WEN YING PATTY, Art Unit 2871
In response to the Office Action dated November 29, 2005

Date: February 28, 2006
Attorney Docket No. 10113711

REMARKS

Responsive to the Office Action mailed on November 29, 2005 in the above-referenced application, Applicant respectfully requests amendment of the above-identified application in the manner identified above and that the patent be granted in view of the arguments presented. No new matter has been added by this amendment.

Present Status of Application

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-3, 7-10 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf et al (US 2002/0130985, hereinafter "Weindorf") in view of Webster et al (US 6,166,554, hereinafter "Webster"). Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf in view of Webster and in further view of Mizuno (US 6,398,560, hereinafter "Mizuno"). Claims 5-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf in view of Webster and in further view of Kakuguchi et al (US 2004/0254001, hereinafter "Kakuguchi").

In this paper, new claims 21-22 are added. Support for the new claims can be found in Figs. 5-6 and 8-9 and pages 4-5 of the application.

Reconsideration of this application is respectfully requested in light of the amendments and the remarks contained below.

Rejections Under 35 U.S.C. 112

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverses the rejection for the reasons as follow.

Applicant respectfully submits that the limitation "port" as recited in claim 20 is described on page 4, lines 2-23 and page 5, lines 8-15, and is illustrated in Figs. 4 and 7 of the application.

Appl. No. 10/770,258
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Furthermore, the meaning of the term "port" is well known in the art of electronic devices. Thus, in light of the content of the present application, the teachings of the prior art, and the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made, it is Applicant's belief that claim 20 apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent. *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379, 55 USPQ2d 1279, 1283 (Fed. Cir. 2000). MPEP 2173.02.

Withdrawal of the rejection of claim 20 under 35 U.S.C. 112, second paragraph, is respectfully requested.

Rejections Under 35 U.S.C. 103(a)

Claims 1-3, 7-10 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf in view of Webster. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf in view of Webster and in further view of Mizuno. Claims 5-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf in view of Webster and in further view of Kakuguchi. Applicant respectfully traverses the rejections for the reasons as follows.

The rejections of claims 1-20 are insufficient, insofar as they do not comply with the requirements of MPEP 707.07 et seq., which requires that all rejections be stated with completeness and clarity.

MPEP 707.07(d) requires that the grounds of a rejection be "fully and clearly stated." The office action fails to meet this requirement in the present application in connection with claims 1-20.

In the office action, the Examiner rejects each of the independent claims 1, 7 and 14 over a combination of Weindorf in view of Webster. For example, in the rejection of claim 1, the Examiner relies on the embodiment shown in Fig. 3 of Weindorf to teach a body (element 302), a circuit board (316) disposed on the body, having a substrate (paragraph 0032), a plurality of

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lead wires with a plurality of openings exposing the lead wires (paragraph 0025, wherein signal wires are provided on the flexible circuit board and are exposed by thermal vias, which are openings of the circuit board), an LED (Fig. 3, element 322 and 324) and a Zener diode (Fig. 3, element 328), each coupled to the lead wires through the openings, wherein the lead wires are juxtaposed on the lead wires (paragraph 0030). See page 3 of the office action.

Similarly, in the rejection of claim 7, the Examiner relies on Fig. 3 of Weindorf to teach a body (element 302), a circuit board (316) disposed on the body, having a substrate having a first side and a second side (paragraph 0032), a plurality of lead wires with a plurality of openings formed on both sides of the substrate exposing the lead wires (paragraph 0025, wherein signal wires are provided on the flexible circuit board and are exposed by thermal vias, which are openings of the circuit board), an LED (Fig. 3, element 322 and 324) and a Zener diode (Fig. 3, element 328), each coupled to the lead wires through the openings, wherein the LED is coupled to lead wires through the openings on the first side, and the Zener diode is coupled to the lead wires through the openings on the second side, wherein the LED and the Zener diode are disposed on the first and second side respectively (paragraph 0025), wherein the Zener diode is directly beneath the LED. See pages 4-5 of the office action.

Claim 14 is rejected using a similar argument with reference to Fig. 3 and paragraph 0025 of Weindorf. See page 6 of the office action. Webster is relied upon in the rejection of all three claims to teach lead wires enclosed by the substrate.

Applicant submits that paragraph 0025, which is relied upon to teach the openings recited in claims 1, 7 and 14, and Fig. 3, which is relied upon to teach other recited features of said claims, describe two mutually exclusive embodiments in Weindorf. In particular, paragraph 0025 describes an embodiment illustrated in Fig. 1 of the patent in which the LED and control circuit are on opposite sides of the circuit board. In this embodiment, thermal vias are provided through the circuit board with "some signal lines connecting the devices." Fig. 3 on the other hand describes an embodiment shown in Figs. 2-3 and described paragraph 0038 of the patent in which the LED and control circuit are disposed on the same side of the circuit board.

Appl. No. 10/770,258
Examiner: CHEN, WEN YING PATTY, Art Unit 2871
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Date: February 28, 2006
Attorney Docket No. 10113711

Applicant respectfully submits that it is impermissible to pick and choose different elements from multiple mutually exclusive embodiments to deprecate the inventions recited in claims 1, 7 and 14. Applicant therefore submits that the rejection of claims 1-20 should be withdrawn.

The office action fails to establish a *prima facie* case of obviousness in that it does not establish suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings.

MPEP 2142 reads in part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In the rejections of each of the independent claims 1, 7 and 14, the office action states:

... it would have been obvious to construct a liquid crystal module as taught by Weindorf et al. wherein the flexible circuit board is multilayer circuit board with lead wires enclosed by the substrate as taught by Webster et al., since Webster et al. teach that such multi-layer circuit board prevents short-circuit when routing the lead wires for signal connections (Column 1, lines 18-21).

Webster discloses a test fixture for connecting the probes of an electronic test instrument to the pins of an integrated circuit. This is unrelated and non-analogous to a flexible backlighting LED structure as described by Weindorf. There is no discussion of an LCD module, an LED, or a Zener diode in Webster, nor is there any teaching or suggestion as to how or why a test fixture

Appl. No. 10/770,258

Examiner: CHEN, WEN YING PATTY, Art Unit 2871

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Date: February 28, 2006
Attorney Docket No. 10113711

such as that described by Webster would be applied to an LCD module. In fact, the only suggestion or motivation to make such a combination comes from Applicant's own disclosure.

Applicant therefore submits that there is no suggestion or motivation to combine the references in the manner set forth in the rejections. Withdrawal of the rejections of claims 1-20 is respectfully requested.

Even when combined in the manner stated by the Examiner, the cited references fail to teach or suggest of the limitations of claims 1, 14 and 20.

Claim 1 recites a liquid crystal module, comprising a body; and a circuit board disposed on the body, having a substrate, a plurality of lead wires enclosed by the substrate, a plurality of openings in the substrate exposing the lead wires, an LED and a Zener diode each coupled to the lead wires through the openings, wherein the LED and the Zener diode are juxtaposed on the lead wires.

Claim 7 recites a liquid crystal module, comprising a body; and a circuit board disposed on the body, comprising a substrate having a first side and a second side, a plurality of lead wires enclosed by the substrate between the first side and the second side, a plurality of openings formed on the first side and the second side to expose the lead wires, an LED coupled to the lead wires through the openings on the first side, and a Zener diode coupled to the lead wires through the openings on the second side, wherein the LED and the Zener diode are disposed on the lead wires on the first side and the second side respectively.

Claim 14 recites a liquid crystal module, comprising a body; and a circuit board comprising: an insulating substrate; a plurality of lead wires enclosed by the insulating substrate; an LED; and a Zener diode; wherein a plurality of openings are provided in the insulating substrate exposing the lead wires, and the LED and Zener diode are each coupled to the lead wires through the openings.

Appl. No. 10/770,258
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Attorney Docket No. 10113711

In all three of the claims, both the LED and Zener diode are coupled to the lead wires *through* openings in the substrate. In the rejections of claims 1-20, the Examiner relies on Weindorf to teach this feature. In claim 1 the LED and Zener diode are juxtaposed on the lead wires. In claim 7, the LED and the Zener diode are disposed on the lead wires on the first side and the second side respectively

In contrast, paragraph 0025 of Weindorf describes that the "top and bottom side of the flexible circuit board 102 may be an exposed ground plane interconnected by thermal vias with some signal lines connecting the devices." Given that the signal routing lines are disposed either on the top or the bottom side of the substrate, and each of the LED and control circuit are also disposed either on the top or the bottom side of the substrate, one or both of the LED and the control circuit must be on the same side of the substrate as the signal routing lines, and is therefore not connected to the signal routing lines through the vias. See paragraphs 0025, 0032 and 0038 of Weindorf. There is no teaching or suggestion that *both* of LED and the control circuit are connected to the signal routing lines *through* the vias in Weindorf.

Applicant further submits that this feature is not found in the other references cited by the Examiner. In particular, Webster does not teach or suggest a LED and Zener diode are coupled to lead wires through openings in a substrate, nor does it teach the juxtaposition of the LED and the Zener diode on one side of the substrate, or the disposition of the LED and the Zener diode on opposing sides of the substrate.

It is therefore Applicant's belief that even when taken in combination, the prior art references relied upon by the Examiner do not teach or suggest all the limitations of claims 1, 7 and 14. For at least this reason, a *prima facie* case of obviousness cannot be established in connection with these claims. Furthermore, as it is Applicant's belief that a *prima facie* case of obviousness is not established for claims 1, 7 and 14, the Examiner's arguments in regard to the dependent claims are considered moot and are not addressed here. Allowance of claims 1-21 is respectfully requested.

Appl. No. 10/770,258
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Attorney Docket No. 10113711

New Claims 21-22

New claim 21 depends from claim 14 and recites that the plurality of lead wires include at least a first lead wire and a second lead wire, and the LED and Zener diode are each coupled to each of the first and second lead wires through the openings in parallel and on the same side of the insulating substrate. New claim 22 depends from claim 21 and recites that the first and second lead wires extend in a direction parallel to a top or bottom surface of the substrate.

Applicant submits that claims 21 and 22 are allowable by virtue of their dependency from claim 14. Applicant further submits that even when combined, the cited references fail to teach or suggest a first lead wire and a second lead wire, wherein the LED and Zener diode are each coupled to each of the first and second lead wires in parallel through openings on the same side of the insulating substrate.

Examiner Interview

An Applicant-initiated telephonic interview was conducted on February 21, 2006. Examiner Wen Ying Chen, her Primary, and the undersigned participated. Claims 1, 7, 16 and 18 were discussed in connection with Fig. 3 and paragraph 0025 of Weindorf. The undersigned argued that Fig. 3 and paragraph 0025 relied upon in the rejections were directed to two different embodiments, as is discussed in detail above. The Examiners argued that the structure shown in Webster combined with devices shown in Weindorf render the claims obvious absent a showing that, for example, it would be non-obvious to use such a structure in any of the embodiments of Weindorf or the art is non-analogous. No agreement was reached.

Conclusion

The Applicant believes that the application is now in condition for allowance and respectfully requests so.

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Attorney Docket No. 10113711

Respectfully submitted,



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Page 13 of 13